

WHAT IS CLAIMED IS:

1. A method for fabricating a magnesium alloy billet for a thixoforming process, comprising processing an AZ91D magnesium alloy ingot by extrusion, compression and isothermal holding, respectively, wherein temperature in the isothermal holding is increased up to an isothermal holding temperature sufficient to obtain a primary solid phase having a size of about 40-60 μ m.
2. The method for fabricating a magnesium alloy billet for a thixoforming process according to claim 1, wherein said extrusion is performed at a temperature range of about 350-400°C and a compression ratio of about 30-50:1.
3. The method for fabricating a magnesium alloy billet for a thixoforming process according to claim 1, wherein said compression is performed at a temperature range of about 200-220°C and a nominal strain of about 20-40%.
4. The method for fabricating a magnesium alloy billet for a thixoforming process according to claim 1 wherein said alloy is heated at a heating rate of about 1.0-5.0°C/sec. up to the isothermal holding temperature.
5. The method for fabricating a magnesium alloy billet for a thixoforming process according to claim 1, wherein the isothermal holding temperature is in a range of about 570-580°C and is maintained for about 30 seconds through about 180 seconds.
6. The method for fabricating a magnesium alloy billet for a thixoforming process according to claim 5 wherein said alloy is heated at a heating rate of about 1.0-5.0°C/sec. up to the isothermal holding temperature.